

Terence Dickinson

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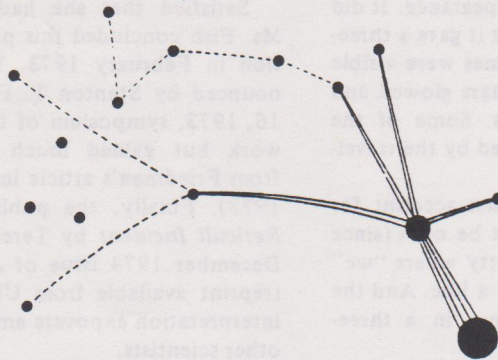
# ZETA RETICULI UPDATE

by Terence Dickinson

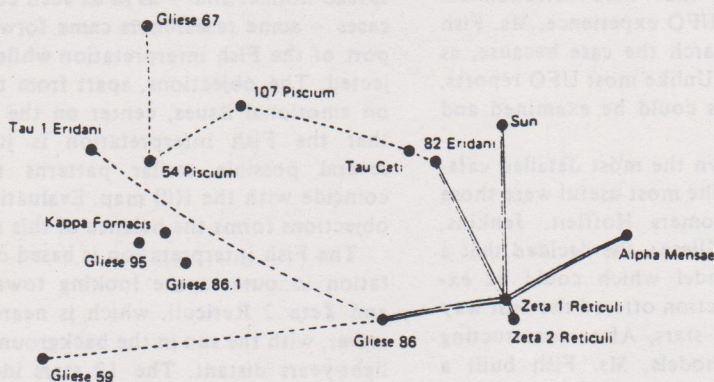
1980

*Six years after its publication The Zeta Reticuli Incident remains one of the most controversial scientific UFO documents ever written. Focusing on a remarkable interpretation of a "star map," allegedly seen inside an extra-terrestrial spacecraft, the article presented what is still regarded by many researchers as the most persuasive evidence yet that Earth is being visited by creatures from other worlds. This update by the author of the original article provides additional information on the star map and the importance of the work of Marjorie Fish, whose painstaking analysis resulted in the map's interpretation.*

Betty Hill's Map



Marjorie Fish's Interpretation



Although still intensely controversial, the idea that some UFOs are manifestations of alien intelligence is accepted by many researchers. One of the strongest pieces of evidence offered to back up this claim is the "star map" seen by Betty Hill during an alleged abduction by aliens. The Betty and Barney Hill saga and the implications of the star map have now emerged as the most famous UFO incident in history. This update was prepared because the interpretation of the star map continues to be debated by astronomers and ufologists.

Suppose you were given an opportunity to communicate with an intelligent creature from another world, what would be your first question? Chances are you would immediately ask: "Where are you from?" Betty Hill reported that she was shown the map in response to just such a question she asked of her abductors. She described the events to psychiatrist Benjamin Simon while under hypnosis. Here are excerpts from the original tapes of that hypnosis session in 1963:

"I asked him where he was from, because I said that I knew that he wasn't from the Earth and I wanted to know where he did come from. And he asked if I knew anything about the universe. And I told him no. I knew practically nothing. . . . He said that he wished I knew more about this, and I said I wish I did too. And he went across the room . . . and he did something . . . there was an opening and he pulled out a map and he asked me had I ever seen a map like this before . . . it was an oblong map. It wasn't square. It was a lot wider than it was long. And there were all these dots on it. And they were scattered all over it. Some were little, just pinpoints. And others were as big as a nickel. . . . There were curved lines going from one dot to another. And there was one big circle, and it had a lot of lines coming out from



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it . . . going to another circle quite close but not as big . . . and I asked him what they meant. And he said that the heavy lines were trade routes. And then the other lines – the solid lines – were places they went occasionally. And he said the broken lines were expeditions . . . so I asked him where was his home port, and he said, 'Where are you on the map?' I looked and laughed and said, 'I don't know.' So he said, 'If you don't know where you are, then there isn't any point of my telling where I am from.' . . . And he put the map back in the space in the wall and closed it."

Dr. Simon asked Betty to draw the map when she returned home after the session. But she was only to draw it if she recalled it correctly. The technique is called post-hypnotic suggestion. Police forces have successfully used a similar method (hypnotic regression) to obtain details that witnesses otherwise have suppressed or just don't remember, such as the attire and physical features of a criminal or the license number of a getaway vehicle. Accordingly, the map was reproduced to the best of Betty's memory and is illustrated on the front cover (top).

Betty Hill recalled later that the map she saw inside the extraterrestrial device was about three feet long by about two feet high. A hologram is the closest thing we have that would fit her description of the map's appearance. It did not seem to be a projection, yet it gave a three-dimensional illusion. No grid lines were visible on the map, but some of the stars glowed and were tinted in different colors. Some of the more prominent stars were linked by the travel-route lines.

Any analysis of the map must account for all these features: The sun must be on it (since the alien was ready to show Betty where "we" are), and it would be linked by a line. And the travel routes should make sense in a three-dimensional framework.

The map was published in 1966 in John Fuller's book *The Interrupted Journey*, where it was noticed by Marjorie Fish, at that time an elementary schoolteacher. (She is currently a lab technician at Oak Ridge National Laboratory.) Fascinated by the thought that the map might represent the first hard astronomical evidence linked to a UFO experience, Ms. Fish decided to fully research the case because, as she later explained, "Unlike most UFO reports, the possible solutions could be examined and the data rechecked."

After tracking down the most detailed catalogs of nearby stars (the most useful were those compiled by astronomers Hoffleit, Jenkins, Van de Kamp, and Gliese), she decided that a three-dimensional model which could be examined from any direction offered the best way to seek the Hill-map stars. After constructing a few preliminary models, Ms. Fish built a larger version using strings supporting beads, which represented the positions of all known stars within 33 light-years of the sun and some

out to 45 light-years – the corners of the cubical model. (One light-year is about six trillion miles.) Completed in December 1968, this model was examined for hundreds of hours from all possible viewpoints. No suspicious groups of stars that included the sun attracted her attention.

Then she decided to ignore the large number of red-dwarf stars that peppered the model – stars considered very unlikely to have habitable planets. Nothing. Next, the fainter K-class stars were passed over to see if something turned up among the brighter stars. Still nothing. Finally, in July 1969, after eliminating all close double stars from contention, a definite pattern resembling some of the Hill map did emerge – a pattern previously obscured by the plethora of fainter stars in and around it.

Within months of this discovery an updated edition of *The Catalog of Nearby Stars* by Wilhelm Gliese was published giving more accurate positions, distances, and some physical characteristics for about 1000 stars out to 72 light-years from the sun. Once this new storehouse of data was available, Marjorie Fish built new scale models showing sectors of the sky around the suspected pattern. Using these, she was able to painstakingly correlate all the stars in the Betty Hill star map to real stars in the sky, including several that hadn't fit before.

Satisfied that she had found the pattern, Ms. Fish concluded this phase of the investigation in February 1973. The results were announced by Stanton T. Friedman at the June 16, 1973, symposium of the Mutual UFO Network but gained much wider dissemination from Friedman's article in *Saga* magazine (July 1973). Finally, the publication of *The Zeta Reticuli Incident* by Terence Dickinson in the December 1974 issue of *Astronomy* magazine (reprint available from UFORI) gave the Fish interpretation exposure among astronomers and other scientists.

The most straightforward appraisal of the Fish interpretation is that it represents the travel routes of space-faring extraterrestrials who were exploring at least 12 stars in the local part of the galaxy. The publication of the articles gave this provocative suggestion widespread notice, and – as in all such controversial cases – some researchers came forward in support of the Fish interpretation while others objected. The objections, apart from those based on emotional issues, center on the contention that the Fish interpretation is just one of several possible stellar patterns that might coincide with the Hill map. Evaluation of these objections forms the balance of this report.

The Fish interpretation is based on an orientation in outer space looking toward Zeta 1 and Zeta 2 Reticuli, which is nearest the observer, with the sun in the background some 37 light-years distant. The 12 stars identified on the map and linked by the travel lines are all physically similar to the sun – single, non-variable stars that could theoretically have



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planets like Earth. In fact, some of them have been examined by astronomers searching for signals from alien intelligences. Unaware of the Fish analysis, they independently concluded that they were stars worth investigating. It is therefore a reasonable assumption that this type of star could purposely be the only type on the map.

A basic point apparently overlooked by critics of the Fish interpretation is that the 12 key stars on the Fish map are the *only* sunlike stars in that volume of space (except for Zeta Tucanae, which happens to be directly behind Zeta 1 Reticuli at this viewing angle, and Kappa Fornacis and Gliese 95, which are identified as part of the map). Specifically, that volume is 48 light-years square and 32 light-years high. This volume encloses the map stars and corresponds to the description of the map's general appearance as stated by Betty Hill. No other interpretation of the Hill map includes all of the solar-type stars within a specific volume of space containing the sun and excludes none — and makes sense in terms of logical travel patterns between the stars in a three-dimensional analysis (that is, no backtracking in the travel lines).

Critics argue that the Fish interpretation does not precisely correspond to the Hill map but is only approximately congruent. When you plot the Hill-map stars and the Fish map on a flat sheet of paper, there is indeed significant statistical variation in the positions of the individual dots on the two plots. But when the analysis is expanded to three-dimensional space, the many remarkable features of the Fish map come into play: The travel patterns make sense in that the distances between the stars are in a logical progression. And, most important, of the more than 100 stars in the specified 74,000 cubic light-years of space, *all* of the sunlike stars are included in the map.

Another objection raised is the "problem" with the prominence of Zeta 1 and Zeta 2 Reticuli on the Hill map and their less imposing appearance on the Fish map. This is entirely due to perspective. Betty Hill stated that she was about three feet from the map's lower right corner with the Zeta Reticuli pair about eye level. This corresponds exactly to the orientation of the stars within the specified volume of space in the Fish interpretation.

When statistical methods are applied to determine the odds against the Fish interpretation being a chance correlation, the results vary depending on the method employed. Michael Peck of Northwestern University suggests one chance in a million billion that a random fall in three-dimensional space would be as close as the Fish interpretation. By other lines of statistical reasoning, computer specialist David R. Saunders (now at Mathematica Corp., Princeton, N.J.) concluded that the chances of finding a positional match among 15 stars of specific spectral types from the thousand-odd stars nearest the sun is at least a thousand to

one against. Or, stated another way, there is one chance in a thousand that the observed degree of congruence would occur in the volume of space included in the Fish interpretation. "In most fields of investigation where similar statistical methods are used, that degree of congruence is rather persuasive," Saunders notes.

The Saunders' statistical analysis was critically examined by Carl Sagan and Steven Soter of Cornell University (for full details of the debate see *The Zeta Reticuli Incident* reprint). However, the Sagan/Soter rebuttal fails to account for the fact that the travel patterns in the Fish interpretation make sense in three-dimensional space. This pivotal point has not yet been successfully refuted. The typical line of reasoning used here is demonstrated in Carl Sagan's recent book *Broca's Brain* (Random House, 1979) on page 69: "A supposed star map said to be retrieved (from memory) from the interior of a flying saucer does not, as alleged, resemble the relative positions of the nearest stars like the sun; in fact, a close examination shows it to be not much better than the 'star map' which would be produced if you took an old-fashioned quill pen and splattered a few blank pages with ink spots."

A close examination shows no such thing. A page of quill-pen-splattered inkspots is irrelevant since the merits or deficiencies of the Fish interpretation rest on a three dimensional analysis, not the two dimensional properties of a flat sheet of paper.

Elsewhere, Sagan and Soter state that the Fish map is "an optimal two-dimensional projection of a three-dimensional model prepared by selecting 14 stars from a positional list of the 46 nearest known sunlike stars." This statement, upon which the burden of their critique rests, ignores the fact that Marjorie Fish started with about 250 stars of all types then reduced her model to sunlike stars *after* a pattern failed to emerge. In any case, there was *never* a Fish model based on 46 sunlike stars: these stars were selected by the author in 1974 as statistical data to support *The Zeta Reticuli Incident* article.

This same mistake has been repeated by several other authors. In *Messengers of Deception* (And/OR Press, 1979), Jacques Vallee states that Marjorie Fish "constructed a model of known sunlike stars" with which she "selected one particular angle from which one particular group of 16 stars seemed (to her eyes) to give a good match." Not only is this a gross simplification, it is entirely false. Hundreds of stars were checked from thousands of viewing angles before the pattern emerged.

Finally, here are some quotes from *Messages from the Stars* by Ian Ridpath (Harper & Row, 1978) that further illustrate the point: "... if one is allowed to select the stars with which to make the model (as Marjorie Fish did) ... and also to choose the viewing point (the star pattern seems to be viewed from an arbitrary



point . . .).” Now as we have seen, the stars were not preselected. And on the second point raised, we could just as easily conclude that they are not viewed from an arbitrary point, we’re just not able to figure out its hidden significance.

A widely referenced critique suggesting that the Fish interpretation is not unique is long overdue for clarification. Charles W. Atterberg, an aeronautical engineer and amateur astronomer, claimed that he located a pattern of stars equal in congruence to the Fish stars. Using all known stars within 17 light-years of the sun as his base catalog and viewing this group from (essentially) infinity, Atterberg attempted to find an alignment that matched Betty Hill’s original sketch. He eventually located one which, at first glance, appears to be a successful alternative. But there are numerous objections to the Atterberg interpretation which do not apply to the Fish interpretation.

The Atterberg map utilizes an arbitrary selection of the stars within 17 light-years of the sun rather than all stars of a specific type, as in the Fish representation. One star, Sigma Draconis, at 18.2 light-years, is included from outside his specified limit. This star was added by Atterberg because not only does it make the map work but it is a star very similar to the sun and is considered by some as having a high probability of supporting habitable planets. The rationalization for including this star is that it is “a good prospect for having a planet with some form of life.” (Even so, some catalogs list Sigma Draconis as a probable variable star which, if true, would rule it out.)

Elsewhere in the Atterberg interpretation, such stars as Groombridge 34 are included in key positions. Groombridge 34 is actually two feeble red suns in a double-star system. One has about 0.5 percent of the sun’s luminosity, and its companion is about 12 times fainter. Although this system might possibly have planets, no one who has studied the question of extraterrestrial environments gives it the slightest chance of having a world where intelligent life could arise indigenously. Justifying one star on the basis of its probability of having habitable planets while including another that is far outside the acceptable limits significantly weakens the Atterberg analysis.

Furthermore, the brightness of the two main stars, as viewed from (essentially) infinity as Atterberg suggests, does not at all match the obvious prominence of two stars in Betty Hill’s original sketch. The brightest star in the Atterberg map would be Sirius along with Procyon, Alpha Centauri, and the sun. Yet all of these but the sun are relegated to insignificant positions in the corner of the map. Two fainter stars, Epsilon Eridani and Epsilon Indi, are given the key positions, and yet they are intrinsically and apparently dim compared to these other stars.

Most of the stars in the Atterberg interpretation are so faint that if they were properly represented, they would be invisible in contrast to the brighter ones. Ross 128 in particular has about 1/3000 the brightness of the sun, and yet it is shown approximately the same. The span of brightness for stars in the Fish interpretation

is not more than a factor of six. All would appear basically as represented except for Zeta 1 and Zeta 2 Reticuli. The perspective of the Fish analysis fits because the stars closest to the observer are Zeta 1 and Zeta 2 Reticuli, which are the ones that appear largest and brightest in Betty Hill’s original sketch.

The Atterberg map also has some questionable travel patterns. Why, for example, when the sun, Epsilon Eridani, and Epsilon Indi are approximately on an equilateral triangle, ten light-years to a side, would all of the travel patterns be from Epsilon Indi to Epsilon Eridani to the sun and none from the sun to Epsilon Indi? By contrast, the Fish interpretation has logical major patterns between Zeta 1 and Zeta 2 Reticuli, since they could be as close as one-sixteenth of a light-year apart — by far the closest pair of stars on the map. (Actually, the distance between Zeta 1 and Zeta 2 is imprecisely known, although one-sixteenth light-year is the minimum possible. Even so, the pattern holds for separations up to several light-years.)

Robert Sheaffer, a computer systems programmer, points out that the orientation of the Atterberg map, unlike the Fish map, “is not purely arbitrary but is exactly perpendicular to Gould’s Belt, a prominent zone of bright stars.” Sheaffer suggests that the bright stars comprising Gould’s Belt “might well serve as a useful reference frame for interstellar travelers, and it is quite plausible that they might base a navigational coordinate system upon it.” However, this is exactly the reverse of the appearance of the Atterberg map, which has some bright stars suppressed and some faint stars prominent. If the presumed space travelers were concerned about the bright stars of Gould’s Belt, surely they would also represent the stars in the map at their actual brightnesses. Actually, the Fish map stars are shown in a plane — the one that they naturally occupy in space. Indeed, this loose cluster of sunlike stars was unnoticed by astronomers until it was discovered as a by-product of Marjorie Fish’s work. Further, the boundaries of the 74,000-cubic-light-year volume of space depicted by the Fish interpretation (which is also exactly a two-thirds cube) neatly enclose all of these sunlike stars. If it were a trifle smaller, some sunlike stars would be excluded, a trifle larger and others would be included. The volume could be regarded as a three-dimensional map of the richest, solar-type star grouping in our sector of the galaxy.

Finally, the Atterberg interpretation breaks down completely with the travel pattern. Some stars are visited while some are bypassed in an apparently random fashion. In particular, Ross 128 is visited but Lalande 21185, a similar-type star, is not. The Fish interpretation has no such inconsistencies. All of the sunlike stars in the region covered by the Fish map are included in the travel pattern. Atterberg’s pattern also includes a number of relatively close doubles but excludes some others. Although the Atterberg map was a valiant attempt, it fails on numerous fundamental points of consistency. At present there is only one logical interpretation of the Hill map, and that is the work of Marjorie Fish.

The accuracy of the Fish interpretation has been independently checked and confirmed at the astronomy departments of Northwestern University, Ohio State University, and the University of Pittsburgh. She has built 23 three-dimensional models showing the relative positions of hundreds of stars, something that had never been done before. Some of these models contained well over 200 stars. If the Hill pattern is as easy to pick out of a random grouping of points as critics imply, then these models should have yielded other solutions. Yet months of diligent searching by Marjorie Fish, prior to the final identification, turned up nothing. The Fish interpretation is astounding in its uniquely logical and sensible solution to the Hill map.

Perhaps the most important by-product of the Fish analysis is that it brought Zeta Reticuli out from the obscurity of the star catalogs. Zeta 1 and Zeta 2 Reticuli are a unique pair: the only known sunlike stars that could be as close as a few light-weeks of each other. If stars are too near each other, they can’t have planets in stable orbits suitable for the development of life over billions of years. Many stars are born in just such a circumstance — in pairs close together. The Zeta Reticuli duo are far apart, in what astronomers call common proper-motion stars. But they are probably close enough so that travel from one to the other would not be the enormous challenge that traveling to the nearest star (4.3 light-years away) is to us. Planets orbiting one of the Zeta Reticuli stars would easily be visible by telescope from a planet of the other star. It is even possible that the two stars could be used as a gravity “whip” to accelerate a spacecraft traveling from one on a close trajectory by the other. All of this makes the Fish map even more provocative.

Despite the many attractive features of the Fish interpretation, it is certainly premature to assume it is *proof* that we have been visited by extraterrestrials. Such a profound conclusion requires the most rigorous standards of unequivocal evidence. However, the fact that all of the stars did not fall into place until the 1969 catalog positions were published rules out a hoax. No one on Earth back in 1961 knew where some of those stars would appear on such a map. Coincidence, however, cannot be totally rejected, as unlikely as it might seem. And, given that possibility, we can only say the Zeta Reticuli star map is provocative evidence — not proof — that extraterrestrial intelligence is visiting Earth in the 20th century.

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Terence Dickinson is editor of *Star & Sky*, the magazine of astronomy and space, and a prolific science journalist with over 500 published articles in newspapers and magazines, including *Omni*, *Popular Mechanics*, and *Science Digest*. He has held scientific positions at the Royal Ontario Museum, the Ontario Science Centre, the Strassburgh Planetarium (Rochester, N.Y.), and *Astronomy* magazine. He has long been an advocate of scientific investigations of the UFO phenomenon. A condensed version of the material in this update appears in *The Encyclopedia of UFOs*, edited by Ron Storry, published in 1980 by Doubleday & Co.

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